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C 0 7 C 49/307		C 0 7 C 49/307	
67/347		67/347	
69/738		69/738	Z
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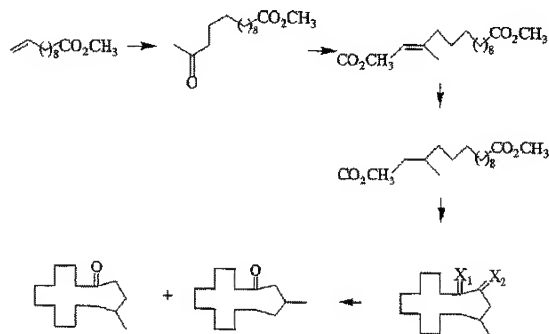
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 ケント、メイドストン、ロンドン・ロード  
 139  
 (74)代理人 弁理士 山崎 行造 (外3名)  
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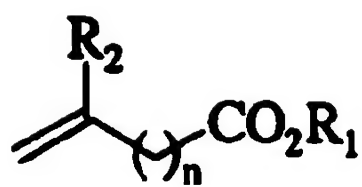
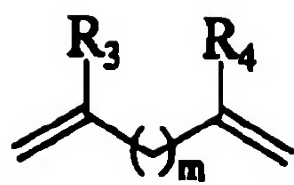
(54)【発明の名称】 ケトンのアルケンへの付加を利用する大環式ケトンの製造

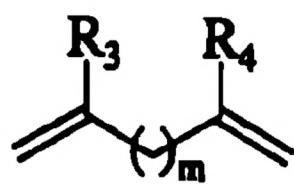
## (57)【要約】

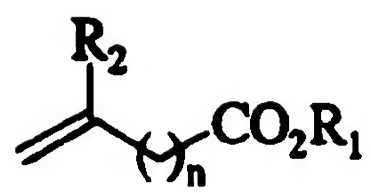
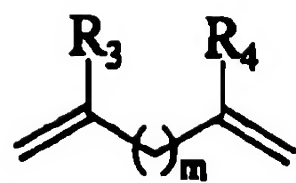
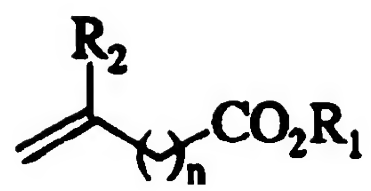
本発明は、反応シーケンスによる大環式ケトンの製造方法であって、一工程が、ケトンの式(1) (式中、 $R_3 = H$ 又は低級アルキル、 $R_4 = H$ 又は低級アルキル、 $m = 4$ ないし8)又は式(2) (式中、 $R_1 =$ アルキル、 $R_2 = H$ 又はアルキル、 $n = 4$ ないし8)のアルケンへのラジカル付加である方法を提供する：

【化1】





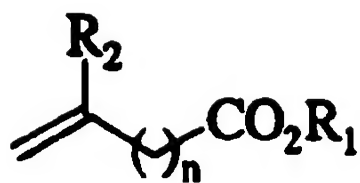
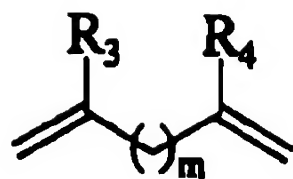


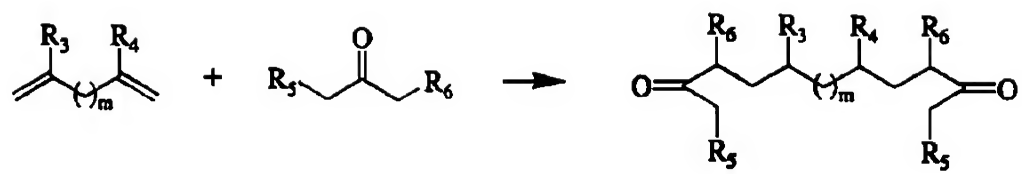
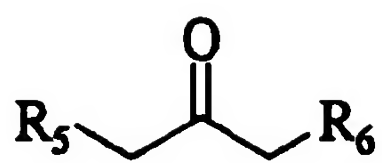


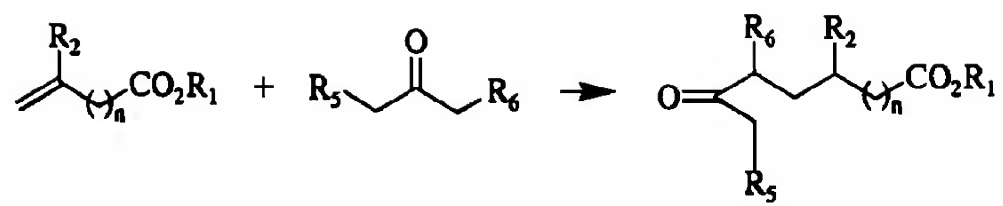


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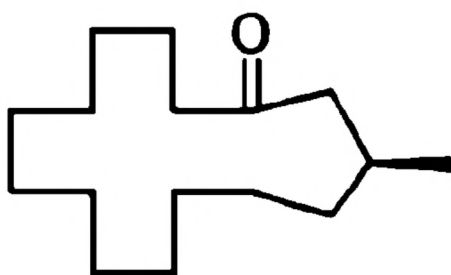
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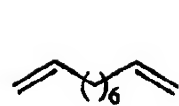










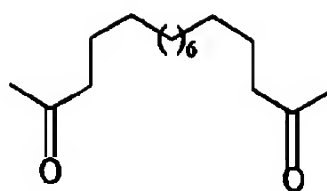


1,9-デカジエン

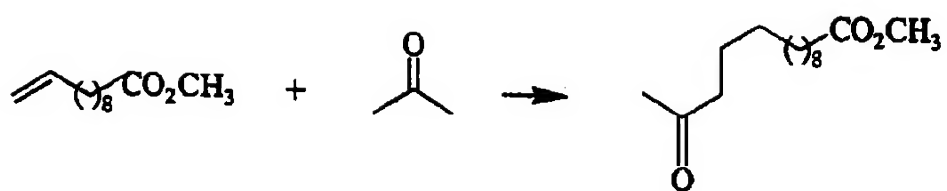
+



アセトン



2,15-ヘキサデカンジオン



ウンデシレン酸メチル

アセトン

13-オキソテトラデカン酸メチル



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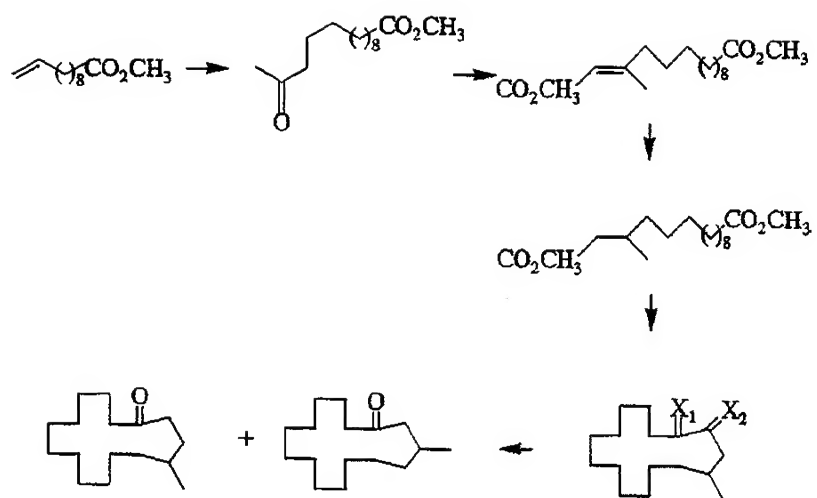


FIG 1

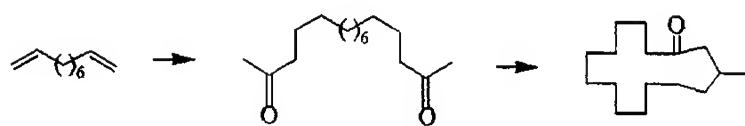
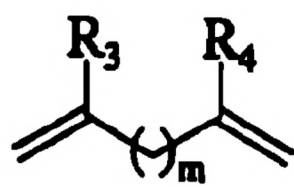
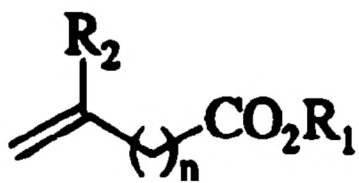
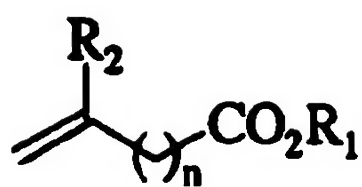
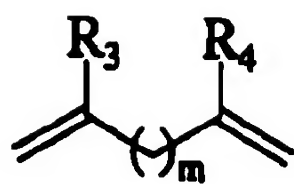


FIG 2











## INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 99/01999

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C07C67/343 C07C45/69

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 C07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 400 509 A (BASF AG) 5 December 1990 (1990-12-05) cited in the application claims 8,9	1-3,6-8, 10
Y	US 1 757 830 A (BRUCE K. BROWN) 6 May 1930 (1930-05-06) the whole document	1-3,6-8, 10
A		4,5
X	CITTERIO, A. ET AL.: "Addition of Ketones to Olefins by Ag+-catalysed Decomposition of Peroxydisulphate" JOURNAL OF CHEMICAL RESEARCH (MINIPRINT), no. 12, December 1983 (1983-12), pages 2669-2683, XP002087776 * table 3, run 16 *	1-5,9,10
Y		6-8
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search

10 December 1999

Date of mailing of the international search report

10 3. 02.00

Name and mailing address of the ISA

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Authorized officer

Janus, S

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 99/01999

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 09933 A (QUEST INTERNATIONAL B.V.) 12 March 1998 (1998-03-12) cited in the application page 4, line 8 -----	11-15

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB 99/01999

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

As a result of the prior review under R. 40.2(e) PCT,  
all additional fees are to be refunded.

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-3(in part), 6-8, 10-15(in part)

Process for the radical addition of ketones to alkenes of formula (1), process for the preparation of macrocyclic ketones using said radical addition, and products prepared by said process.

2. Claims: 1-3(in part), 4, 5, 9, 10-15(in part)

Process for the radical addition of ketones to alkenes of formula (2), process for the preparation of macrocyclic ketones using said radical addition, and products prepared by said process.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/GB 99/01999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0400509 A	05-12-1990	DE 3918015 A	06-12-1990
		JP 2763383 B	11-06-1998
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		EP 0925269 A	30-06-1999

